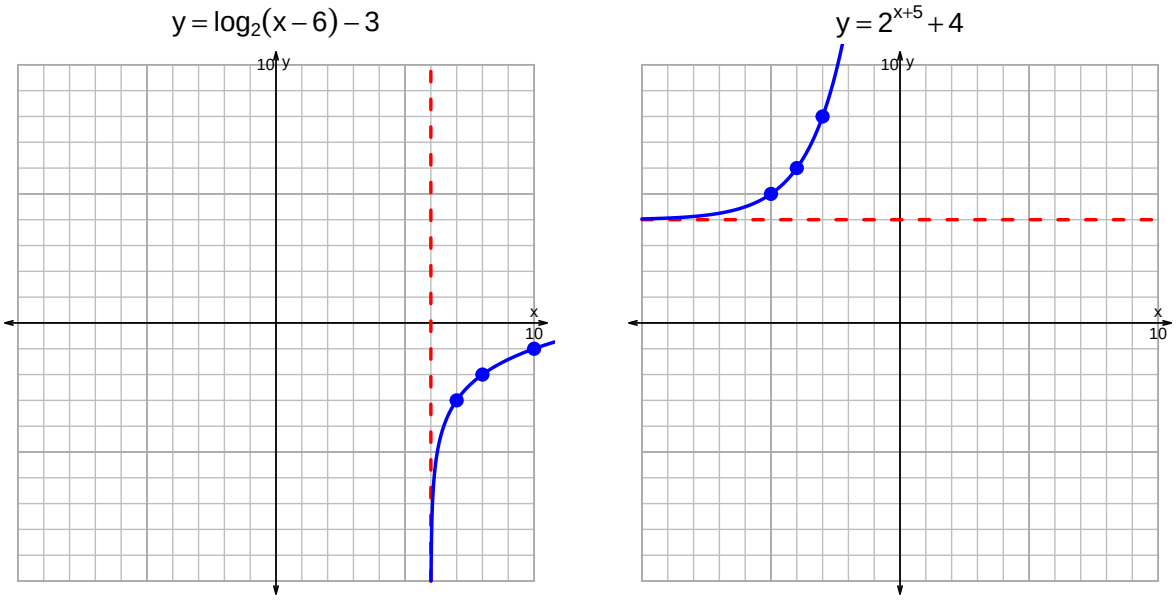
Name: Date:

s18quiz: EXP LOG (Solution v115)

1. Graph $y = \log_2(x-6) - 3$ and $y = 2^{x+5} + 4$ on the grids below. Also, draw any asymptotes with dotted lines.



2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$23 = \left(\frac{4}{3}\right) \cdot 2^{7t/5}$$

Divide both sides by $\frac{4}{3}$.

$$\frac{23 \cdot 3}{4} = 2^{7t/5}$$

Take log, base 2, of both sides.

$$\log_2\left(\frac{23 \cdot 3}{4}\right) = \frac{7t}{5}$$

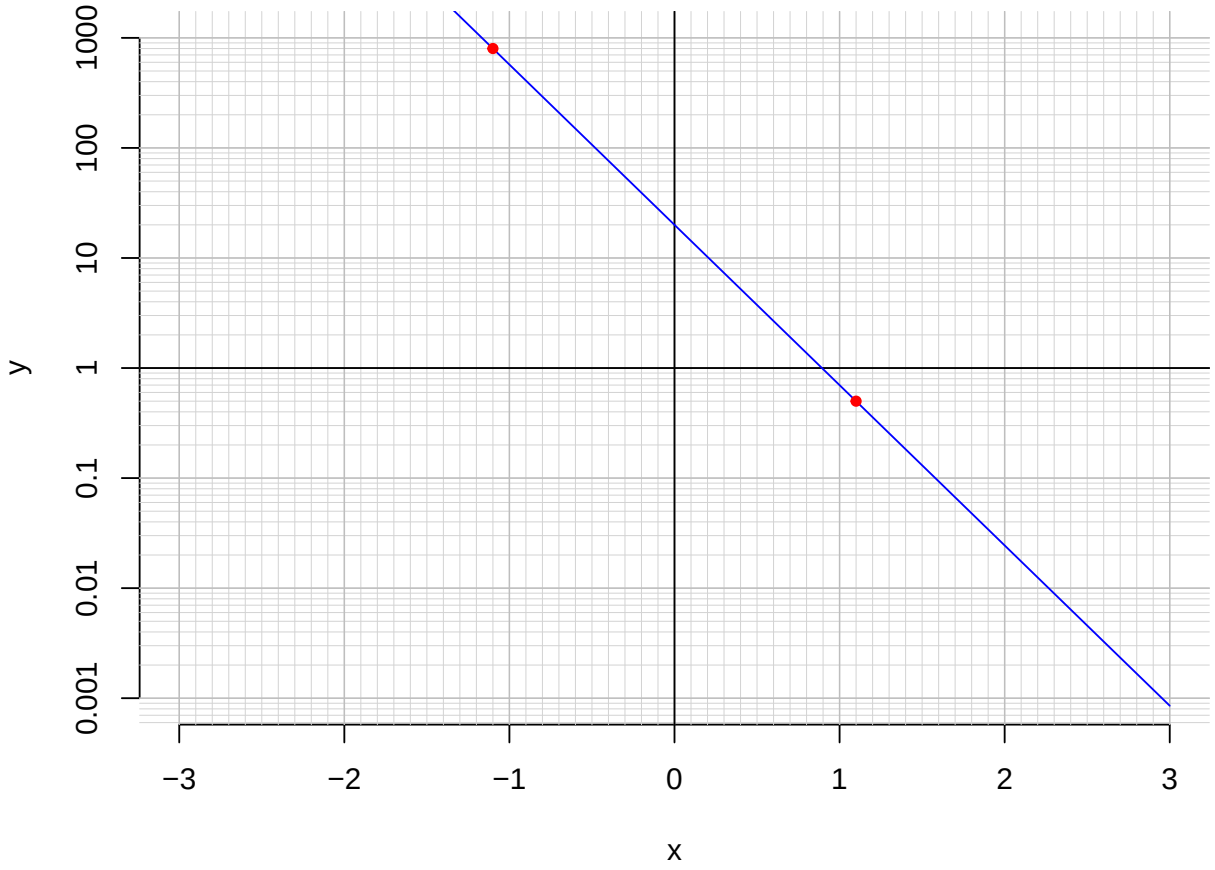
Divide both sides by $\frac{7}{5}$.

$$\frac{5}{7} \cdot \log_2\left(\frac{23 \cdot 3}{4}\right) = t$$

Switch sides.

$$t = \frac{5}{7} \cdot \log_2\left(\frac{23 \cdot 3}{4}\right)$$

3. An exponential function $f(x) = 20 \cdot e^{-3.35x}$ is graphed below on a semi-log plot.



a. Using the plot above, evaluate $f(1.1)$.

$$f(1.1) = 0.5$$

b. Express $f^{-1}(x)$, the inverse of f.

$$f^{-1}(x) = \frac{-1}{3.35} \cdot \ln\left(\frac{x}{20}\right)$$

c. Using the plot above, evaluate $f^{-1}(800)$.

$$f^{-1}(800) = -1.1$$